On page 34, replace the paragraph starting on line 7, with the following paragraph:

-- In Fig. 2B, liquid 220b is introduced into the wells 208b and 210b. In the present configuration, the liquid is indicated as being the same, but with different protocols the liquid could be different. The liquid 220b from the wells 208b and 210b moves by capillary action into channel 206b and halts at chamber 216b, due to the absence of capillarity at the chamber 216b. A sample may then be added to chamber 216b, which will wet the surface 218b. Where the sample is small enough, it will not contact the inlet ports 222b and 224b of channel 206b. Depending upon the nature of the solvent added to the chamber 216b and the time interval in which the solvent is allowed to stand, all or a portion of the solvent may evaporate, so that upon total evaporation, only a solvent free liquid or solid will be present.--

On page 40, replace the paragraph bridging pages 40 and 41 with the following:

-- The device has an upper plate 740 and a lower plate 742. The lower plate 742 has channels 716 and 720, which connect buffer reservoir 718 and waste reservoir 722 with zone enclosure 704, where the channel provides solution under the upper portion of the zone enclosure 712 with liquid from the channels 7716 and 720. While the diameters and the reservoirs are shown as approximately equal in Fig. 7B, this is for illustration. In practice, the zone enclosure diameter would normally not be greater, usually smaller than the reservoir diameters. In this case, by having a non-wettable wall 741 in the zone enclosure 708 , a convex meniscus 712 is observed and the height to which the liquid in the zone can rise is restricted.--

In the claims

Please cancel claims 1-38 without prejudice, and add new claims 39-50 as follows:

--39. A microfluidics device comprising

a solid substrate,

a microstructure unit having

(i) a sample well having an interior end surface and an exposed opening, and a wall surface extending therebetween, said sample well being adapted to receive an assay solution,

(ii) a reservoir for holding a liquid, and

(iii) a channel extending between said reservoir and said sample well for carrying liquid in the reservoir to said sample well,

said sample well having at least one cross-sectional area greater than that of said channel and an interior border disposed within the well and spaced from said exposed opening, intermediate said opening and interior surface, wherein liquid placed in said sample well through said opening, and/or introduced therein through said channel, forms a sample volume having a meniscus created by said border, below said exposed opening,

said sample volume being maintained substantially constant, as liquid is added to said sample volume through said opening, by liquid flow through said channel toward said reservoir, and as solvent evaporates from said sample volume, by liquid flow from said reservoir through said channel toward said sample well.

40. The device of claim 39, wherein said sample well has a cross-sectional area five to twenty times larger than the cross-sectional area of said channel.

41. The device of claim 39, wherein said sample well has different cross-sectional areas on progressing from said interior surface to said exposed opening.

42. The device of claim 41, wherein said sample well has a conical shape and the cross-sectional area increases on progressing from said interior surface to said exposed opening.

43. The device of claim 39, wherein said sample well has a cylindrical shape.

44. The device of claim 39, wherein said border is a wettable/nonwettable border formed on said wall surface.

45. The device of claim 39, wherein said border is a sharp change in the direction of the wall surface.

46. A method of conducting a microvolume assay in an open assay zone, comprising

(a) forming in a sample well having an exposed opening and an interior border disposed within the well and spaced from the exposed opening, a sample volume having a meniscus created by said border and disposed below said opening,

(b) adding liquid sample reagent to said meniscus, through said opening, and allowing the meniscus to equilibrate by liquid flow from the sample volume through a channel connecting the sample well to a reservoir, and

(c) maintaining said sample volume substantially constant as solvent evaporates from the meniscus by flow of solvent from the reservoir through the channel into the sample well.

47. The method of claim 46, wherein said forming includes adding liquid from said reservoir to said well through said channel.

48. The method of claim 46, wherein said forming includes placing liquid in said well through said opening.

49. The method of claim 46, wherein said forming includes placing a liquid sample in said sample well and, following said placing, drying the liquid to deposit dry reagents within the sample well.

50. The method of claim 49, wherein said forming includes adding solvent to dry reagents through said channel.--